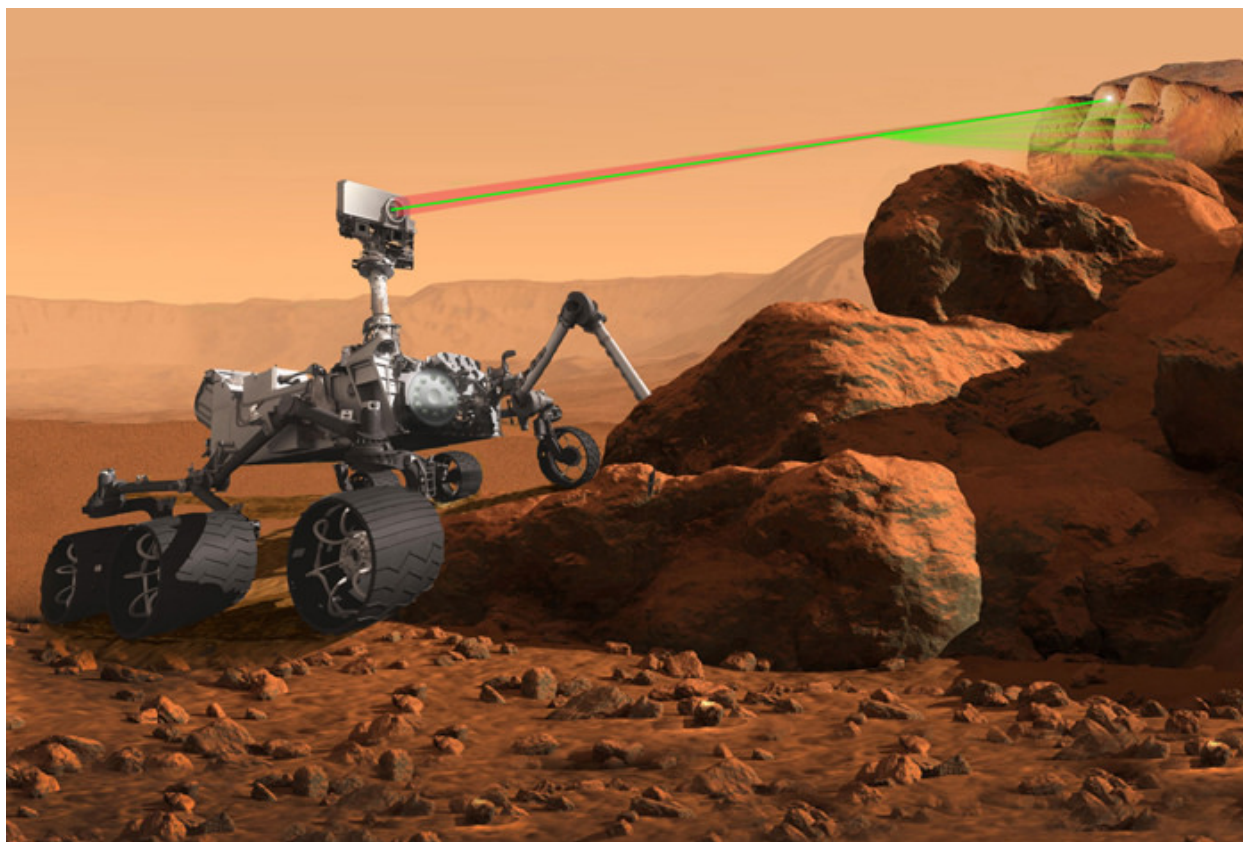


Los Alamos laser selected for 2020 Mars mission

September 2, 2014



NASA

announced recently that laser technology originally developed at Los Alamos National Laboratory has been selected for its new Mars mission in 2020.

“We are extremely excited to be going to Mars again,” said Los Alamos National Laboratory planetary scientist Roger Wiens, Principal Investigator of the newly selected SuperCam team and current principal investigator of the Curiosity Rover’s ChemCam Team. “More importantly for the mission, I know SuperCam is the very best remote sensor that NASA can have aboard.”

SuperCam builds upon the successful capabilities demonstrated aboard the Curiosity Rover during NASA’s current Mars Mission. SuperCam will allow researchers to sample rocks and other targets from a distance using a laser. In addition to harnessing Los-Alamos developed Laser-Induced Breakdown Spectroscopy (LIBS) technology—which can determine the elemental composition of the target from more than 20

feet away—SuperCam adds another spectrum to its laser for Raman and time-resolved fluorescence spectroscopy: A technique partially refined at Los Alamos and the University of Hawaii that provides the molecular makeup of a target, therefore allowing geologists to determine mineralogy and search for organic materials. The enhancements provided by these two institutions include the successful demonstration of performing these measurements at long distances and in miniaturization of the instrumentation.

SuperCam also will add color to its high-resolution visible imaging capability as well as visible and infrared spectroscopy. The updates make SuperCam the perfect instrument to provide fine-scale mineralogy, chemistry, organic detection, and color images, with the added bonus of being able to dust off a surface via laser blasts.

The new instrument will occupy a similar volume on the upcoming rover as the ChemCam instrument does aboard Curiosity and will weigh nearly the same as well.

In addition, Los Alamos will build the detector electronics for the Scanning Habitable Environments with Raman & Luminescence for Organics and Chemicals (SHERLOC) instrument. SHERLOC is a spectrometer that will provide fine-scale imaging and use an ultraviolet (UV) laser to determine fine-scale mineralogy and detect organic compounds. SHERLOC will be the first UV Raman spectrometer to fly to the surface of Mars and will provide complementary measurements with other instruments in the payload. Tony Nelson of Los Alamos's Space Electronics and Signal Processing Group will lead the efforts in constructing the electronics. Los Alamos laser scientists Sam Clegg of Los Alamos's Physical Chemistry and Applied Spectroscopy Group and Wiens are part of the SHERLOC instrument science team.

SuperCam is a continuing effort between Los Alamos and the IRAP research institution in Toulouse France, and the French Space Agency (CNES), with additional collaboration from the University of Hawaii and the University of Valladolid (UVA) in Spain.

To view the full news release, go [here](#).

To view NASA's new release with more information regarding the instruments, go [here](#).

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